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Flood Risk Assessment

Pear Tree Cottage, Ratcliffe Road, Witherley,
Atherstone, CV9 3NX

Mark Kendall



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Executive Summary

FPS Environmental (“FPS”) on behalf of Mark Kendall (“the client”), have undertaken a Flood Risk Assessment (“FRA”) to support a planning application for a proposed garage extension at Pear Tree Cottage, Ratcliffe Road, Witherley, Atherstone, CV9 3NX (“the site”).

The River Anker, designated as an EA Main River, flows in a north-westerly direction approximately 173m to the south-west of the site. The River Sence, also designated as an EA Main River, flows in a south-westerly direction approximately 470m to the north of the site. The River Sence feeds into the River Anker approximately 640m to the north-west of the site. The EA Flood Map for Planning (Drawing 04) shows that the site is located in Flood Zone 3. Flood Zone 3 is land assessed as having less than a greater than 1 in 100 (1% AEP) chance of river flooding in any given year.

In the absence of detailed model data to confirm fluvial flood depths at the property, the 1 in 1000-year (0.1% AEP) flood level has been estimated as 70.18m AOD (Above Ordnance Datum) within the closest extents of Flood Zone 2 to the property, which indicates potential flood depths up to 330mm could occur adjacent to the proposed garage extension area. This is considered a conservative estimate of the potential flood risk to the property.

In accordance with Annex 3 of the NPPF: Flood Risk and Coastal Change, the proposed garage extension is considered to be a ‘Less Vulnerable’ development. Table 2 of the PPG shows the Flood Risk Vulnerability and Flood Zone ‘Incompatibility’. Table 2 indicates that less vulnerable development is considered acceptable in areas of Flood Zone 2 and 3A.

Table 3 of the NPPF states that the Sequential Test and Exception Test do not need to be applied for Minor Development and are therefore not applicable in this instance.

The site has been assessed for a variety of flood sources, and based upon detailed analysis, this FRA has identified that the risk fluvial flooding is considered High. Flooding from Groundwater is considered to be Low-Medium. Flooding from Artificial Sources is considered to be Low, while surface water flooding is deemed to be Very Low. Reservoir flooding and tidal are considered to be Negligible.

This FRA demonstrates that the proposed development:

- Is suitable in the location proposed;
- Is unlikely to place additional persons at risk of flooding; and,
- Is unlikely to increase flood risk elsewhere through the loss of floodplain storage, impedance of flood flows or increase in surface water run-off.

Introduction

1.1 Authorisation & Context

FPS Environmental (“FPS”) on behalf of Mark Kendall (“the client”), have undertaken a Flood Risk Assessment (“FRA”) to support a planning application for a proposed garage extension at Pear Tree Cottage, Ratcliffe Road, Witherley, Atherstone, CV9 3NX (“the site”).

1.2 Aims and Objectives

The overall aim is to demonstrate that the proposed development at the site is appropriate in context of flood risk. The proposed site plan, existing site layout, proposed site layout and elevations are included within Appendix A for reference. FPS Environmental has undertaken this FRA in accordance with the most up to date local and national policies on development and flood risk by:

- Assessing whether the site is likely to be affected by flooding from different sources;
- Providing an assessment of the vulnerability of the proposed development and its suitability in relation to the identified flood risk;
- Providing an opinion in relation to the likely impacts of the proposed development on flooding and elsewhere; and,
- Where required, presenting flood risk mitigation measures necessary to ensure that the proposed development and occupants will be safe, whilst ensuring flood risk is not increased elsewhere.

1.3 Information Sources Used

To prepare this report, the following information sources and general guidance documents have been used:

- National Planning Policy Framework (NPPF), Flood Risk and Coastal Change Planning Practice Guidance;
- Leicestershire and Leicester City (LLC) Level 1 Strategic Flood Risk Assessment (SFRA) – JBA, October 2017;
- Hinckley & Bosworth Borough (HBB) SFRA – JBA Consulting, July 2019;
- Leicester City Council (LCC) Preliminary Flood Risk Assessment (PFRA) – URS, June, 2011.
- LCC Surface Water Management Plan (SWMP) – May, 2012;
- Proposed Boundary Pear Tree Cottage – Scale 1:500;
- Garage Plans & Elevations – Drawing no. PTC/01/06;
- Environment Agency (EA) Interactive Online Flood Mapping - Accessed November 2024;
- EA Surface Water Dataset – Accessed November 2024;
- 1m Resolution Light Detection and Ranging (LiDAR) Data – Downloaded November 2024; and,

- British Geological Survey Drift & Geology Maps - Accessed November 2024.

1.4 Report Limitations

This assessment of flood risk has sought to use the most accurate and up to date flood mapping for the location. The site boundary has been supplied by the client and the assessment of risk is based on this.

This report has been prepared with due care and diligence in accordance with industry best practice and guidance. The conclusions in this report are valid only to the extent that the information provided to FPS was accurate and complete at time of receipt.

1.5 Site Setting

The site is located at National Grid Reference (NGR): SP320987 / SP3200998771

The site covers an area of approximately 0.11Ha and comprises an existing two-storey detached residential dwelling, large rear garden and front driveway area. The north and east of the site are bordered by adjacent fields, the south of the site is bordered by Atherstone Road, while the west of the site is bordered by adjacent residential properties.

The site location can be seen in Appendix A and Drawings 01 and 02 for reference.

1.6 Topographic Mapping & Levels

In the absence of a topographical survey, freely available 1m resolution Light Detection and Ranging (LiDAR) data has been downloaded for the site and local area. An extract of the LiDAR data is provided on Drawing 03.

In the vicinity of the site, ground levels generally fall in a northerly direction.

The LiDAR data indicates ground levels at the site fall from a level of approximately 69.76m AOD at the southern boundary of the site adjacent to Atherstone Road, to approximately 69.52m AOD along the rear northern boundary of the site.

Ground levels adjacent to where the proposed garage extension area are approximately 69.85m AOD.

1.7 Local Hydrology

The River Anker, designated as an EA Main River, flows in a north-westerly direction approximately 173m to the south-west of the site.

From a review of the Flood Estimation Handbook (FEH) web portal, the catchment area of the River Anker is approximately 142km². The upstream catchment area consists of the urbanised and rural areas to the south-east of Atherstone.

The River Sence, also designated as an EA Main River, flows in a south-westerly direction approximately 470m to the north of the site. From a review of the Flood Estimation Handbook (FEH) web portal, the catchment area of the River Sence is approximately 177km², consisting of areas to the north-east and east of the site.

There are also existing field drainage ditches located approximately 100m north and west of the site, that are identified to connect to the River Anker.

1.8 Existing Drainage

Details of the existing drainage at the site are not known.

Given the rural location of the site, it is considered likely that surface water run-off drains to either a soakaway(s), or a local shared system that connects into public / highways drainage systems within the adjacent road to the south or towards the nearby drainage ditches to the north.

Severn Trent Water sewer asset plans have not been obtained as part of this FRA.

Flood Risk Evaluation

The following sections provide an evaluation of the risk posed by the key flood sources in relation to the site location. Consideration is given to the severity of flood risk to the site as a whole, making use of existing flood mapping, high-level local strategic studies, and available topographic information.

2.1 Fluvial Flood Risk

Fluvial flood risk originates from a watercourse of any size that may affect a site when the channel capacity is exceeded. This type of flooding often occurs following an extreme rainstorm event or a prolonged period of wet weather.

The EA Flood Map for Planning shows that the site is located in Flood Zone 3. Flood Zone 3 is land assessed as having less than a greater than 1 in 100 (1% AEP) chance of river flooding in any given year.

The EA Flood Map for Planning can be seen on Drawing 04.

The EA's Product 4 data has also been assessed, with a copy of the information included within Appendix B. The information received identifies flood levels for both the River Anker (defended) to the west of the site and the River Sense (undefended) north of the site, although no defences are identified. The data nodes are along the main channel, not direct on the site, but are used for this assessment as the most applicable. These are reproduced in the Table below.

Table 1 – Product 4 Data. River Anker – RA, River Sense - RS

River	Annual Exceedance Probability – Maximum Water Levels mAOD				
	Defended/Undefended				
	2% (1 in 50 year)	1% (1 in 100 year)	1% inc. 20% Climate Change (1 in 100 year +20%CC)	0.5% (1 in 200 year)	0.1% (1 in 1000 year)
RA Node 5093	69.68	69.82	70.07	69.95	70.12
RA Node 5098	69.46	69.58	69.81	69.70	69.87
RS Node 12285	68.63	68.67	68.73	68.72	68.86

It should be noted that the site location boundary on the Product 4 data is incorrect but that the level information is still applicable to this assessment.

It should be noted that the site location boundary on the Product 4 data is incorrect but that the level information is still applicable to this assessment.

The data identifies that the more significant flood events occur from the River Anker, with higher predicted flood levels. To provide a robust assessment, the highest levels for node 5093 have been used in comparison with the existing site levels, around the proposed works (69.85mAOD). During the 1 in 100 year event with a 20% allowance for climate change, flood levels indicate that the site may experience flood depths of 0.22m.

An assessment of the 1 in 1000 year event has also been carried out as this is the highest available data and is likely comparable to the 1 in 100 year event with an upper end allowance for climate change. This identifies a peak flood depth of 0.27m.

The EA have produced updated guidance relating to projected increases in peak river flows that may arise due to climate change. The site is located within the Tame Anker & Mease Management Catchment area and the peak increases to river flows are summarised as follows:

Table 2 – Peak River flow allowances.

Year	Tame Anker & Mease Management Catchment Peak River Flow Allowances		
	Central	Higher	Upper
2020's	10%	15%	24%
2050's	11%	17%	30%
2080's	22%	30%	51%

The range of allowances is based on percentiles. A percentile describes the proportion of possible scenarios that fall below an allowance level. The 50th percentile is the point at which half of the possible scenarios for peak flow fall below it, and half fall above it.

The Central allowance is based on the 50th percentile; the Higher allowance is based on the 70th percentile; and the Upper End allowance is based on the 95th percentile.

The HBB SFRA states:

The primary fluvial flood risk in Hinckley and Bosworth borough is along the River Sence, a tributary of the River Anker. This presents a fluvial flood risk primarily to the village of Sheepy Magna. The River Sence presents a less significant fluvial flood risk to several smaller villages adjacent to the channel, including Congerstone and Bilstone.

Historic Flooding

Online historic flood maps contained within the HBB SFRA and EA historic flood maps opened in GIS software show the property to be located outside of areas that have historically flooded.

Historic flooding datasets are not always complete and comprehensive and therefore the absence of historic flood records does not mean that a site has never flooded or is not at risk from flooding.

The HBB SFRA states:

The historic flooding records relating to flooding incidents since 2012, provided by Leicestershire County Council are shown in Figure 5-2. The records do not specify the source of flooding, only the affected property or infrastructure. There are notable clusters of flooding history in the main urban regions of the borough, namely Hinckley and Earl Shilton. There are also notable dates which have a high frequency of recorded incidents: 27th July 2013 (2 incidents), mid-January 2014 (2 incidents), 9th March 2016 (15 incidents), mid-June 2016 (3 incidents) and late January 2018 (2 incidents). In addition to the Historic Flooding Incidents and Assets Register, Leicestershire Fire and Rescue Service provided their Incident Recording System data, which contains the responses of the Fire and Rescue Service to incidents involving flooding or rescue from water within Hinckley and Bosworth borough. The majority of incidents (16) occurred on Watery Gate Lane in Thurlaston and Earl Shilton, with the remaining two incidents occurring on Mythe Lane in Witheley and Congerstone Road in Carlton.

Fluvial flood risk is considered to be **High**.

The site is located within Flood Zone 2 and Flood Zone 3. Product 4 data identifies that the site is likely to flood in the 1 in 100 year storm event. An assessment up to the 1 in 1000 year event identifies that flood depths may be up to 0.27m, which is expected to provide a robust estimate comparable to the 1 in 100 year event with an upper end allowance for climate change.

Further considerations are made within Section 3 of this FRA to ensure that the risk remains at or below this level for the lifetime of the development.

2.2 Tidal Flood Risk

Tidal flood risk can affect the coastline as well as estuaries and rivers that are tidally influenced. Flood events often coincide with the tidal regime, high rainfall events or other natural phenomena, which can lead to water levels covering low-lying land or exceeding natural or man-made defences.

The site is located upstream of any areas shown to be potentially affected by tidal flooding, and furthermore has an elevation of >69m AOD. Therefore, this source of flooding is not considered to pose a risk to the site.

Tidal flood risk is considered to be **Negligible**, and no further consideration from this risk source is deemed necessary as part of this FRA.

2.3 Surface Water Flooding

Surface water flooding occurs when local drainage networks are overwhelmed during an extreme rainfall event, causing water to flow over the surface and follow gravity to the lowest point where it often pools. This flood source is increasingly becoming one of the major contributors of flood risk, due to changing weather patterns and increased extreme rainfall events occurring across the UK. This places more pressure than ever on drainage systems, which are often overwhelmed during flash flood events, normally only designed to take between a 1 in 20 and a 1 in 30 return period event.

EA Risk of Flooding from Surface Water mapping can be seen on Drawings 05, 06 and 07, showing the flood extents and potential flood depths for the high, medium, and low risk events. These are defined as follows:

- High risk: annual chance of flooding of greater than 3.3%;
- Medium risk: annual chance of flooding of between 1% and 3.3%;
- Low risk: annual chance of flooding of between 0.1% and 1%;
- Very Low risk: annual chance of flooding of less than 1%.

The property is shown to remain unaffected from surface water flooding in all modelled scenarios.

In all modelled scenarios, surface water flood depths are indicated to accumulate within the adjacent field to the south of the site, with depths of up to 600mm indicated. The adjacent field to the north-east of the site is also shown to be impacted from surface water with depths of up to 150mm. However, all surface water depths are shown to be confined to their respective areas and are not shown to encroach onto the site.

No further information has been identified relating to surface water flooding within the vicinity of the site.

Surface water flood risk is considered to be **Very Low**.

The property is shown to remain unaffected from surface water flooding in all modelled scenarios.

Surface water flooding can occur in very localised areas as a result of ground levels and absence of drainage infrastructure within a site.

Further considerations are made within Section 3 of this FRA to ensure that the risk remains at or below this level for the lifetime of the development.

2.4 Reservoir Failure

Assessment of risk of a reservoir failure may be interpreted as the extent of flooding that would occur, should any reservoir that has a capacity larger than 25,000m³, suffer a catastrophic failure. Mapping of this nature is described by EA as a worst-case scenario, with a flood event of this type being extremely unlikely to occur.

The online EA Flood Risk from Reservoirs map shows that the site is located within an area at potential risk from reservoir flooding. The reservoirs that could affect the site during a breach event are listed below:

- **Bosworth Water Trust Amenity Lake** (grid reference SK3850002900)

Owner: Bosworth Water Trust

Lead Local Flood Authority: Leicestershire

- **Glebe Farm** (ID222) (grid reference SK3608301313)

Owner: Mr Andrew Caton

Lead Local Flood Authority: Leicestershire

- **Merevale Park Estate** (grid reference SP3000097100)

Owner: Sir William Dugdale

Lead Local Flood Authority: Warwickshire

In any case current legislation ensures that reservoirs are inspected regularly, and essential safety work is carried out as required. The likelihood of a failure event occurring is therefore considered to be very low.

The risk of flooding from reservoir failure is considered to be **Negligible**, and no further consideration from this risk source is deemed necessary as part of this FRA.

2.5 Groundwater Flooding

Flooding from a groundwater source often occurs during or following a period of prolonged wet weather within areas that are low lying underlain by permeable rocks (aquifers). When aquifers are at their maximum holding potential, flooding at surface level can occur from beneath the ground.

Groundwater as a sole flooding mechanism is often regarded as low risk, as it often relies on a coinciding rainfall, or flood event from an additional source to become a risk. The main contributory factor that will enhance the risk of groundwater flooding is prolonged periods of high rainfall, which result in the groundwater saturation level rising to the point where it reaches the surface.

Online BGS mapping shows the bedrock geology beneath the site comprises the *Gunthorpe Member – Mudstone*. This bedrock is defined by the EA as a *Secondary B Aquifer*. Secondary B aquifers are mainly lower permeability layers that may store and yield limited amounts of groundwater through characteristics like thin cracks (called fissures) and openings or eroded layers.

The BGS mapping indicates that there are no superficial deposits found beneath the site. Shallow deposits typically have good hydraulic connectivity with nearby watercourses, and therefore when water levels in the watercourse rise, the groundwater level within these deposits can also rise. In topographically lower areas, this can result in groundwater emerging at the surface. Groundwater flooding may only subside once the water table naturally lowers when levels in the watercourse decrease.

The Hydrogeological Map of the UK defines the bedrock as a *Low Productivity Aquifer*.

The Cranfield University online “Soilscapes” map identifies the soils below the site comprise *Loamy soils with naturally high groundwater*, which are indicated to drain into shallow groundwater supplies.

The HBB SFRA states:

In general, less is known about groundwater flooding than other sources. Groundwater flooding can be caused by:

- *High water tables, influenced by the type of bedrock and superficial geology*
- *Seasonal flows in dry valleys, which are particularly common in areas of chalk geology*
- *Rebounding groundwater levels, where these have been historically lowered for industrial or mining purposes*

Where there are long culverts that prevent water easily getting into watercourses Groundwater flooding is different to other types of flooding. It can last for days, weeks or even months and is much harder to

predict and warn for. Monitoring does occur in certain areas, from example where there are major aquifers or when mining stops. The Coal Authority do monitor groundwater levels in parts of the Borough and the records show that groundwater levels have been rising over time since mining has stopped.

The site is not located within a Groundwater Source Protection Zone.

There is no evidence to suggest the site has previously been affected by groundwater flooding.

Overall, the risk of flooding from groundwater is considered to be **Low-Medium**.

The site is located within an area comprising of loamy soils with naturally high groundwater.

Further considerations are made within Section 3 of this FRA to ensure that the risk remains at or below this level for the lifetime of the proposed development.

2.6 Artificial Flood Sources

Flood risk from artificial sources would include the failure of man-made drainage or the water supply network. Although the likelihood of such an occurrence is highly unpredictable, it is recommended that any potential future development at the site takes into account the location of any existing below ground services, in order to avoid any inadvertent flooding taking place during the construction phase and in the future.

There is no information contained within the HBB SFRA to give an indication to the risk of potential flooding from artificial sources within the vicinity of the site. Severn Trent Water have not been contacted for records of historic sewer flooding as part of this FRA.

There is no evidence to suggest that there has been historic flooding from artificial sources at the site.

The risk of flooding from sewers and artificial sources is considered to be **Low**.

Any buried system can be at risk of surcharge due to localised blockages and there therefore remains a low risk to the site.

Further considerations are made within Section 3 of this FRA to ensure that the risk remains at or below this level for the lifetime of the proposed development.

2.7 Summary

Table 2 provides a summary of the classification of risk to the site from all flood sources and indicates where further considerations are required in the context of the proposed development.

Table 2 – Flood Risk Summary

Risk Source	Overall Risk Classification	Additional Considerations
Fluvial	High	See Section 3
Tidal	Negligible	None
Surface Water	Very Low	See Section 3
Reservoir Failure	Negligible	None
Groundwater	Low-Medium	See Section 3
Artificial Flood Sources	Low	See Section 3

Flood Risk in Planning Context

This report has so far evaluated all potential flood sources that may affect the site. The following sections describe the identified flood risks in the context of the proposed development and provide recommendations where required, for the mitigation or reduction of those risks to enable safe development.

3.1 Flood Risk Status and Development Viability

The EA Flood Map for Planning (Drawing 04) shows that the site is located within Flood Zone 3.

The proposals comprise a garage extension. The final building footprint of the proposed garage area is approximately 42m² and is therefore considered a minor development.

In accordance with Annex 3 of the NPPF: Flood Risk and Coastal Change, the proposed garage extension is considered to be a 'Less Vulnerable' development.

Table 2 of the PPG shows the Flood Risk Vulnerability and Flood Zone 'Incompatibility'. Table 2 indicates that less vulnerable development is considered acceptable in areas of Flood Zone 2 and 3A.

Table 3 of the NPPF states that the Sequential Test and Exception Test do not need to be applied for Minor Development and are therefore not applicable in this instance.

EA Standing Advice for Minor Development in Flood Zones 2 and 3 states:

- *Make sure the floor levels are either no lower than existing floor level or 300mm above the estimated flood level. You will also need to use flood resistant materials up to at least 300mm above the estimated flood level.*
- *If you cannot raise the floor levels in this way, you will also need to include extra flood resistance and resilience measures. These measures should protect the property to at least 300mm above the estimated flood level.*
- *Flood water can put pressure on buildings, causing structural issues. If your design aims to keep out a depth of more than 600mm of water, you should get advice from a structural engineer.*

3.2 Design Principles for Development

It is recommended that, based on the current design proposals, the following design principles should be incorporated to demonstrate its long-term resistance to flooding:

Floodplain Compensation

The extension and final garage area has an approximate footprint of 42m².

Given the small increase in built footprint at the site, the potential flood flow routes and volume are not considered to be significantly affected as a result of the development. Provision of compensatory flood storage is therefore not deemed necessary.

Development Levels

Where possible, the internal finished floor levels should be raised to protect against the identified 0.27m depth of flooding and water ingress from any residual isolated external surface water or fluvial accumulations.

The standing advice for minor extensions (<https://www.gov.uk/guidance/flood-risk-assessment-standing-advice#advice-for-minor-extensions>) states:

- *Make sure the floor levels are either no lower than existing floor levels or 300 millimetres (mm) above the estimated flood level.*

The estimated flood level is a river flood level with a 1 in 100 or greater annual probability plus an allowance for climate change.

The in 1 in 1000 year flood level has been used to provide the most robust assessment available and is considered comparable to the 1 in 100 levels with an upper end allowance for climate change.

Additionally and where levels cannot be raised over 300mm, flood resistance measures should be provided up to 300mm above the design flood level, or a flood resilient approach should be implemented, allowing the garage to flood during an extreme flood event.

Access/Egress

Access and Egress to the site is via Atherstone Road along the southern boundary of the site.

The EA Flood Map for Planning indicates that Atherstone Road is situated within Flood Zone 3 and could potentially experience fluvial water accumulations following flood events. Thus, access and Egress to the site may be restricted during a flood event should the public highway flood.

Should the public highway ever flood, the occupants should remain within the site until floodwater has receded so that safe access and egress can be achieved. The occupants should not drive through flood water.

It is recommended that all occupants are signed up to the EA Flood Warning Service and are aware of weather warnings that could provide an indication as to when surface water flooding may occur. A Flood Action Plan could also be prepared.

Flood Resistance

The dwelling and proposed extension areas are located within Flood Zone 3 and Flood Zone 2. Flood resistance measures should be considered as part of the design proposals should the occupier wish to mitigate against extreme flooding scenarios.

Any flood resistance measures should be provided up to approximately 70.42m AOD, which is 300mm above the estimated design flood level.

Flood resistance measures that could be considered include:

- **Flood Doors or Barriers:** Flood doors could be installed at external entrances at the ground floor level. Alternatively, demountable barrier systems could be installed across doorway openings to prevent water ingress.
- **Raised Floor Levels:** It is good practice to raise the ground floor above adjacent external ground levels to minimise the risk of water ingress should flooding occur adjacent to the building.
- **Non-Return Valves:** To mitigate against sewer surcharging within the private drainage system, surcharge protection would be achievable through the use of non-return valves within the drainage system, or pan seals with backflow valves on sink outlets. However, this is unlikely required as no ground floor toilet facility is shown on the site plans/drawings.
- **Masonry:** The occupier should keep external walls in good condition in order to minimise the potential for flood water to ingress through this point. Basic maintenance includes keeping masonry pointing in good order. Brickwork could be treated with a waterproofing cream to help reduce ingress, and pointed with a waterproof additive.

Flood Resilience

Flood resilience is where emphasis is placed upon making a site recoverable from a flooding event as quickly and economically as possible. Flood resilient buildings are designed and constructed to reduce the impact of flood water entering the building so that no permanent damage is caused, structural integrity is maintained and drying and cleaning is easier. There is an opportunity to consider flood resilience measures within the internal fixtures and fittings proposed.

Flood resilience measures that could be adopted include:

- **Internal Walls:** Promoting the use of water-resistant plaster and plasterboard (horizontal application where possible).
- **Skirting boards:** There are various options available for skirting boards. Wooden skirting boards can be treated with sealants such as Yacht Varnish to improve their flood resistance, or alternative materials can be used such as Tricoya or Plastic. It is also possible to use a tiled upstand.
- **Wiring:** Raising of electrical sockets as far up the wall as reasonably practicable and avoiding low level junction boxes or fuse boards will reduce any water damage to these items;
- **Flooring:** The use of water-resistant flooring (such as concrete, tiles or stone), which would minimize the time and effort to clean away any flood water.
- **Raise Internal Apparatus:** Where possible, any internal apparatus that is not designed to resist water ingress should be raised (e.g. white goods); and,
- **Puddle Pump/Wet Vac:** To enable the efficient dewatering of the site in the event of water ingress, the provision of such items should be kept internally.

Surface Water Drainage

As part of the development design, it should be ensured that the proposals do not increase flooding elsewhere.

The footprint of the extension is approximately 42m².

The Garage Plans & Elevations site plan (Drawing number PTC/0106) indicates that a soakaway pit will be implemented adjacent to the proposed garage extension, stating:

“Soakaway pit to be dug below inlet level. Size to be 1200mm x 1200mm x 1200mm filler with 20mm pea gravel capped with a geotextile sheet above inlet level. Pit to be passed on site by LA inspector all subject to soil type and conditions. Inspection Chamber to be fitted. A percolation test to be carried out and submitted to Building Control”.

As noted, percolation tests should be completed in accordance with Approved Document – Part H to confirm its suitability.

The nature of the surface water drainage system serving the existing development at the site is to be confirmed during the site works and retained as part of the proposed development.

3.3 Flood Awareness & Maintenance

It is important that all residents at the site have an awareness of flood risk at a local level, and that any necessary actions can be taken prior to flooding.

Flood Warnings & Alerts: The property is located within an EA Flood Warning Area and EA Flood Alert Area.

- **Flood Warning Area** – River Anker at Mancetter, Witherley and Atherstone (033FWF3ANKR005).
- **Flood Alert Area** – River Anker & River Sence (033WAF307).

The extent of the Flood Warning and Flood Alert Areas within the vicinity of the site are shown on Drawing 08.

It is recommended that all occupants of the site are subscribed to the EA Flood Warning service through the following website:

<https://www.gov.uk/sign-up-for-flood-warnings>

- **Weather Alerts:** The Met Office provide weather warnings when extreme weather is forecast. Their service includes warnings for rain and thunderstorms. The occupants can check the local weather forecast and register to receive weather warnings from the Met Office through the following website:

<https://www.metoffice.gov.uk/weather/warnings-and-advice>

- **Flood Plan:** In order to efficiently prepare for a potential future flood event, the occupants could prepare an all-encompassing Flood Action Plan. The action plan should consider how to respond in the event of a flood. The Environment Agency provide template flood plan documents, copies of which are provided can be downloaded from the following webpages:

<https://www.gov.uk/government/publications/personal-flood-plan>

- **Drainage:** The site occupants should regularly inspect guttering and downpipes and clear any debris that exists. This will reduce the likelihood of any blockages and subsequent increase in surface water risk during heavy rainfall events.

Conclusion

The site has been assessed for a variety of flood sources, and based upon detailed analysis, this FRA has identified that fluvial flooding is considered High. Flooding from Groundwater is considered to be Low-Medium. Flooding from Artificial Sources is considered to be Low, while surface water flooding is deemed to be Very Low. Reservoir flooding and tidal are considered to be Negligible. The client's development aspirations can manage/mitigate any residual flood risk as part of the design.

This FRA has therefore demonstrated that the proposed development can be undertaken in-line with NPPF guidance, and that it is:

- Suitable in the location proposed;
- Unlikely to place additional persons at risk of flooding; and,
- Unlikely to increase flood risk elsewhere through the loss of floodplain storage, impedance of flood flows, or increase in surface water run-off.

Limitations of the report

This report has been prepared by FPS Environmental (FPS) solely for the benefit of Mark Kendall (“the Client”) and has not been assigned to any other third parties. If reliance on this report was required by a third party, this could be arranged for an agreed fee. This report should not be used by the client in relation to any other matters not covered specifically by the scope of the report. If this report does not contain a signature in the Document Control window, then this is an uncontrolled electronic copy and should not be relied upon by the client or any other recipient, as FPS Environmental cannot give assurance on the source or content of the document. FPS has used all reasonable skill, care and diligence in the preparation of this report.

The Flood Risk Assessment report has been designed to satisfy planning requirements, as outlined in Section 1. It is a desktop review of information provided by the client and from selected private and public databases. It only includes a site investigation where specifically referenced. This report does not make a detailed site-specific assessment of the suitability of the existing drainage on the Site. If this is required, then a site survey should be considered. FPS Environmental accepts no responsibility for the accuracy or completeness of third-party data reviewed within this assessment.

This report is provided under FPS Environmental Standard Terms and Conditions.

Drawings



Legend

 Site Boundary

Google Satellite

Scale @ A4: **1:2,000**

Drawing Title

Site Location Plan

Project

Pear Tree Cottage - Atherstone CV9 3NX

Client

Mark Kendall

Drawing No. & Revision

01

Date

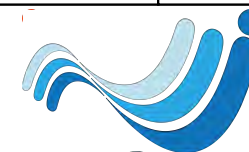
29/10/2024

Drawn By

RH

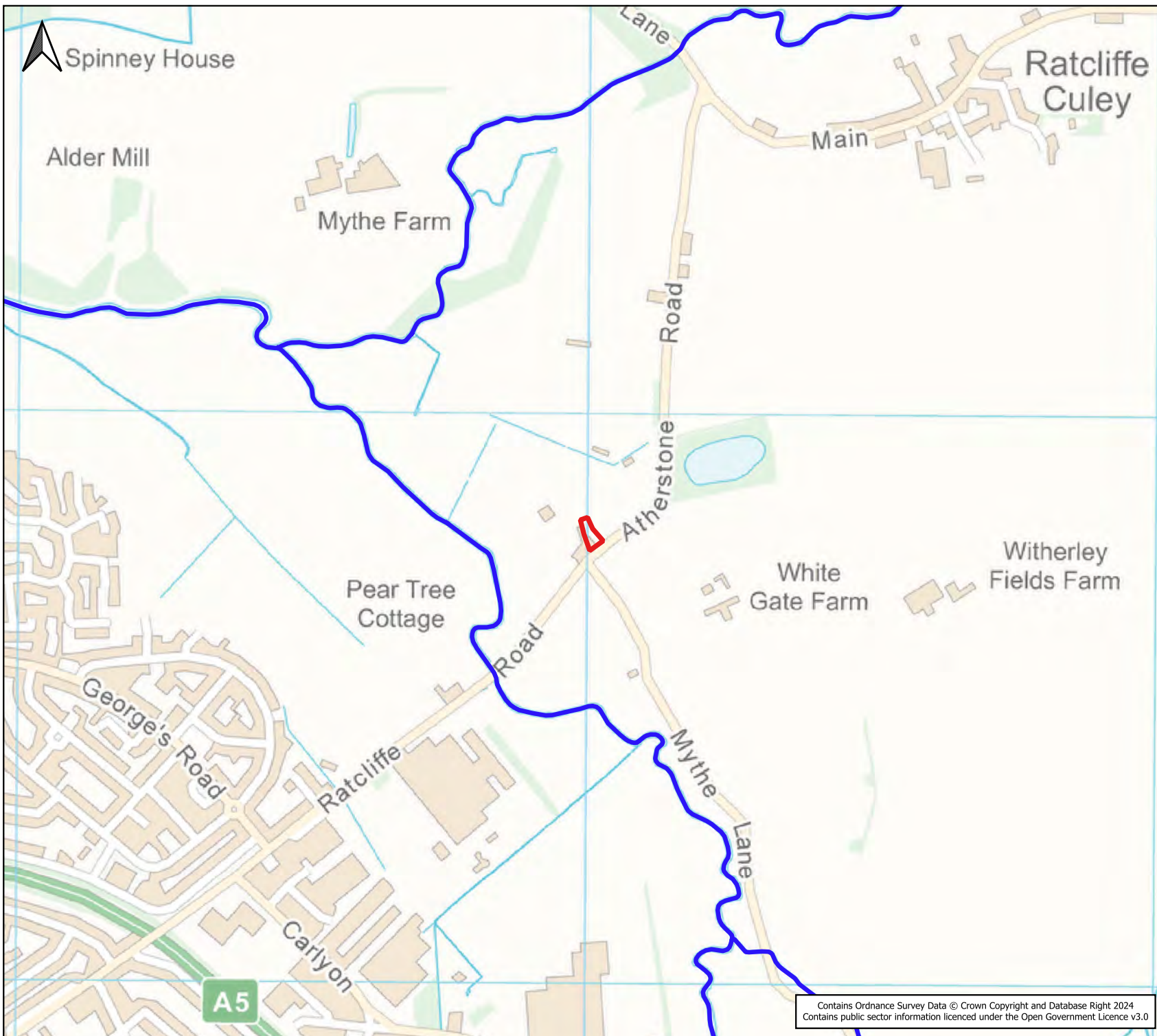
Approved By

SH



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Legend

- Site Boundary
- Main River

Scale @ A4: **1:15,000**

Drawing Title Site Location Plan	
Project Pear Tree Cottage - Atherstone CV9 3NX	
Client Mark Kendall	
Drawing No. & Revision 02	Date 29/10/2024
Drawn By RH	Approved By SH
 FPS environmental www.fpsenvironmental.co.uk	



Legend

 Site Boundary

LiDAR Data
(Metres above Ordnance Datum)

 68.00

 68.75

 69.50

 70.25

 71.00

Google Satellite

Scale @ A4: **1:2,000**

Drawing Title

LiDAR Data

Project

Pear Tree Cottage - Atherstone CV9 3NX

Client

Mark Kendall

Drawing No. & Revision

03

Date

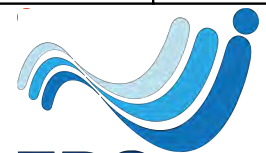
29/10/2024

Drawn By

RH

Approved By

SH



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Legend

-  Site Boundary
-  Flood Zone 3
-  Flood Zone 2

Google Satellite

Scale @ A4: **1:2,000**

Drawing Title
EA Flood Map for Planning

Project
Pear Tree Cottage - Atherstone CV9 3NX

Client
Mark Kendall

Drawing No. & Revision 04	Date 29/10/2024
Drawn By RH	Approved By SH



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Legend

 Site Boundary

Risk of Flooding from Surface Water
1 in 30 year depth (m)

 > 1.20

 0.90 - 1.20

 0.60 - 0.90

 0.30 - 0.60

 0.15 - 0.30

 0.00 - 0.15

Google Satellite

Scale @ A4: **1:2,000**

Drawing Title

Risk of Flooding from Surface Water
1 in 30 year (3.3%) Flood Depth

Project

Pear Tree Cottage - Atherstone CV9 3NX

Client

Mark Kendall

Drawing No. & Revision

05

Date

29/10/2024

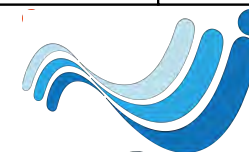
Drawn By

RH

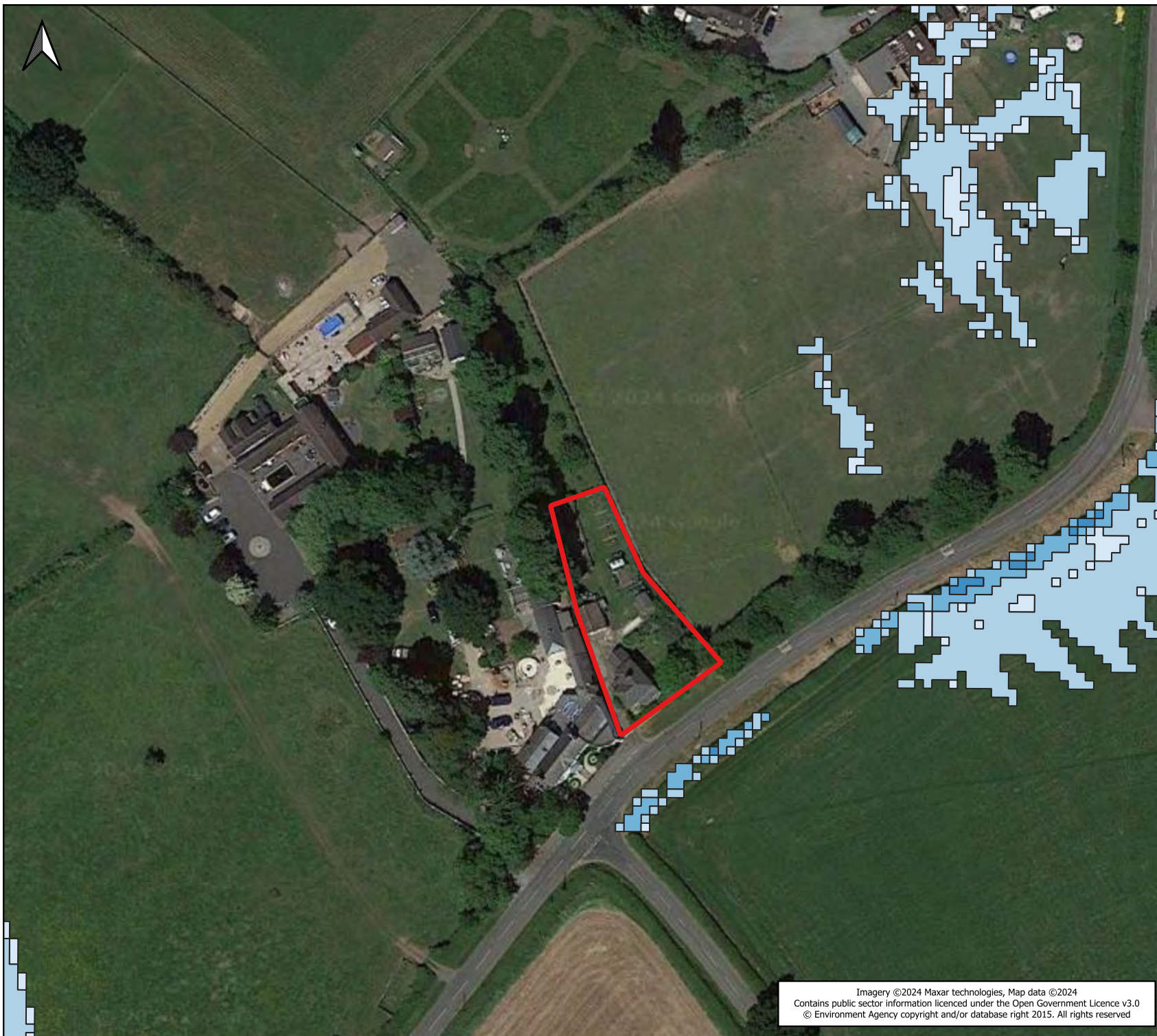
Approved By

SH

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Legend

 Site Boundary

Risk of Flooding from Surface Water
1 in 100 year depth (m)

 > 1.20

 0.90 - 1.20

 0.60 - 0.90

 0.30 - 0.60

 0.15 - 0.30

 0.00 - 0.15

Google Satellite

Scale @ A4: **1:2,000**

Drawing Title

Risk of Flooding from Surface Water
1 in 100 year (1%) Flood Depth

Project

Pear Tree Cottage - Atherstone CV9 3NX

Client

Mark Kendall

Drawing No. & Revision

06

Date

29/10/2024

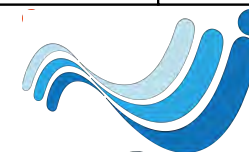
Drawn By

RH

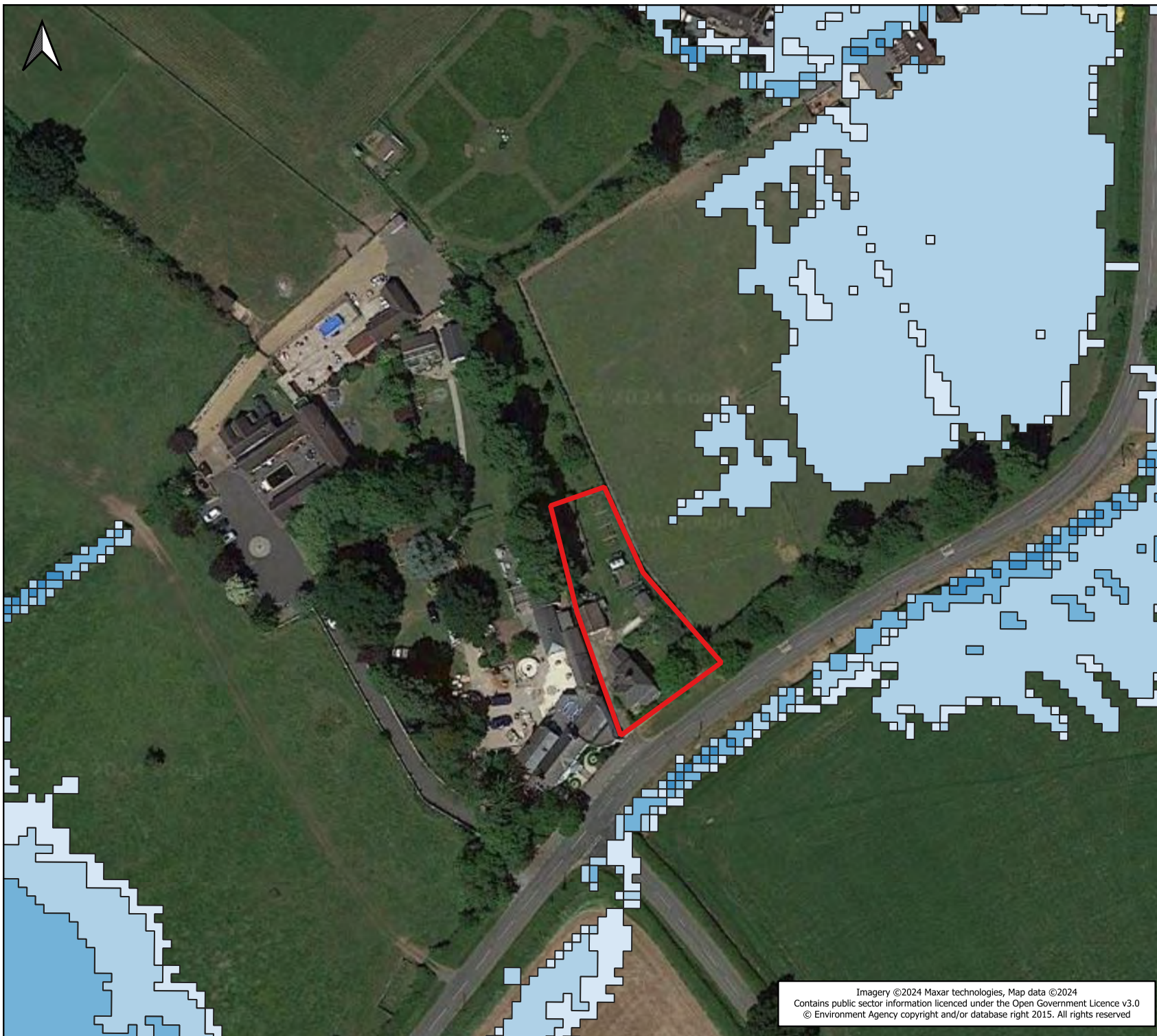
Approved By

SH

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Legend

 Site Boundary

Risk of Flooding from Surface Water
1 in 1000 year depth (m)

 > 1.20

 0.90 - 1.20

 0.60 - 0.90

 0.30 - 0.60

 0.15 - 0.30

 0.00 - 0.15

Google Satellite

Scale @ A4: **1:2,000**

Drawing Title

Risk of Flooding from Surface Water
1 in 1000 year (0.1%) Flood Depth

Project

Pear Tree Cottage - Atherstone CV9 3NX

Client

Mark Kendall

Drawing No. & Revision

07

Date

29/10/2024

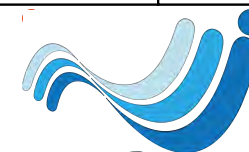
Drawn By

RH

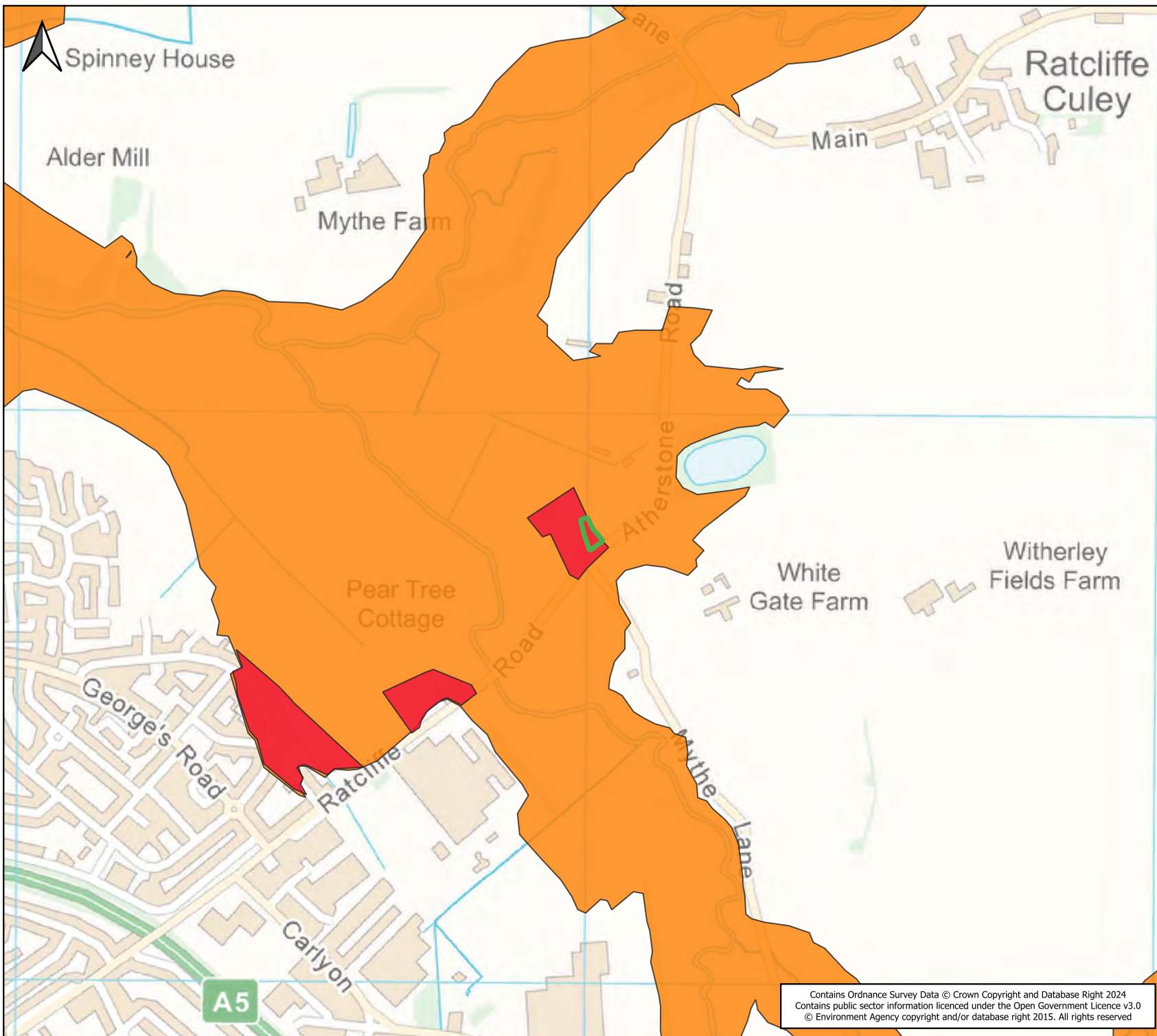
Approved By

SH

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Legend

-  Site Boundary
-  EA Flood Warning Area
-  EA Flood Alert Area

Scale @ A4: **1:15,000**

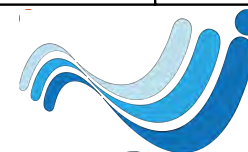
Drawing Title
EA Flood Warning & Flood Alert Area

Project
Pear Tree Cottage - Atherstone CV9 3NX

Client
Mark Kendall

Drawing No. & Revision	Date
08	29/10/2024

Drawn By	Approved By
RH	SH



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Appendices

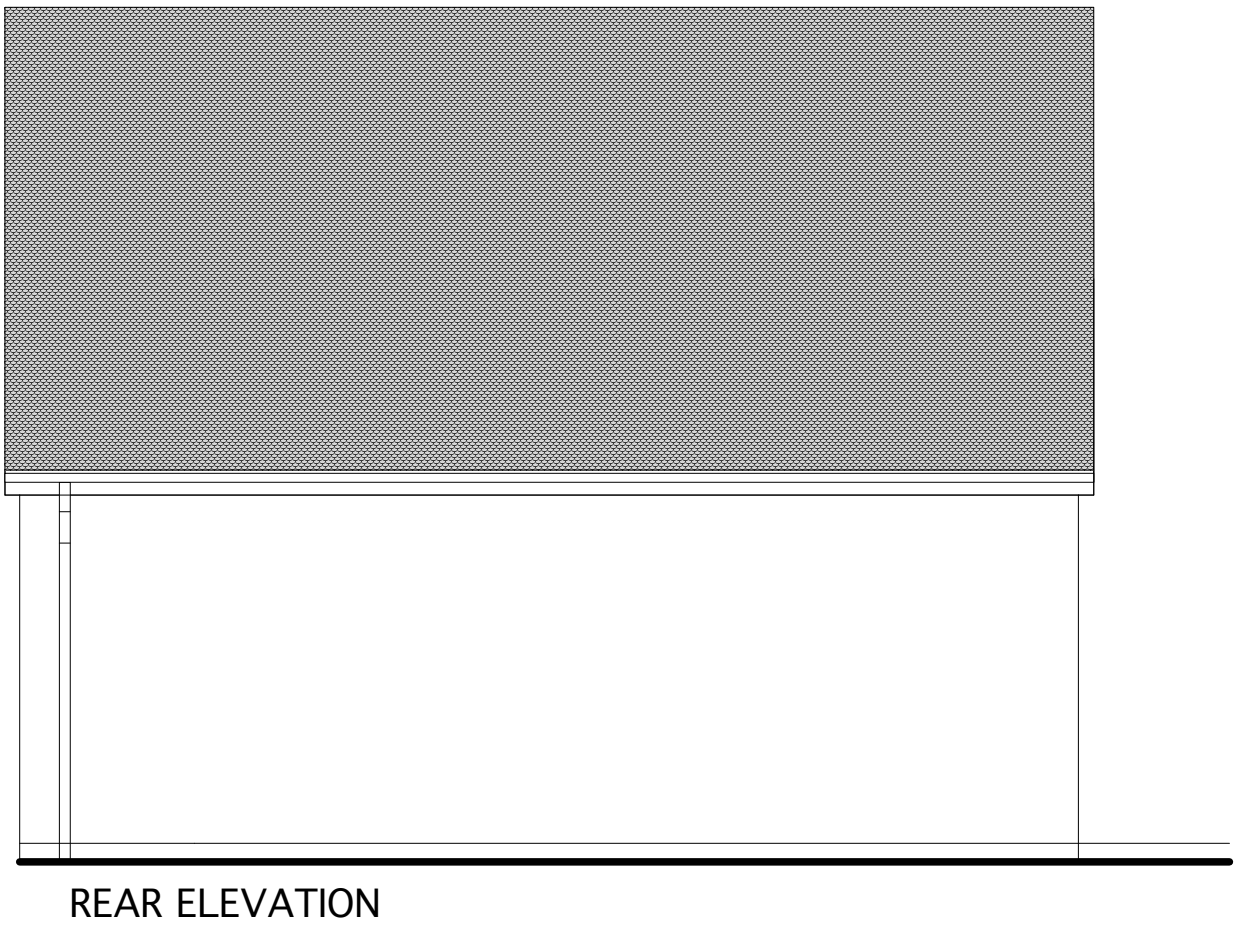
Appendix A

Site Plans & Elevations

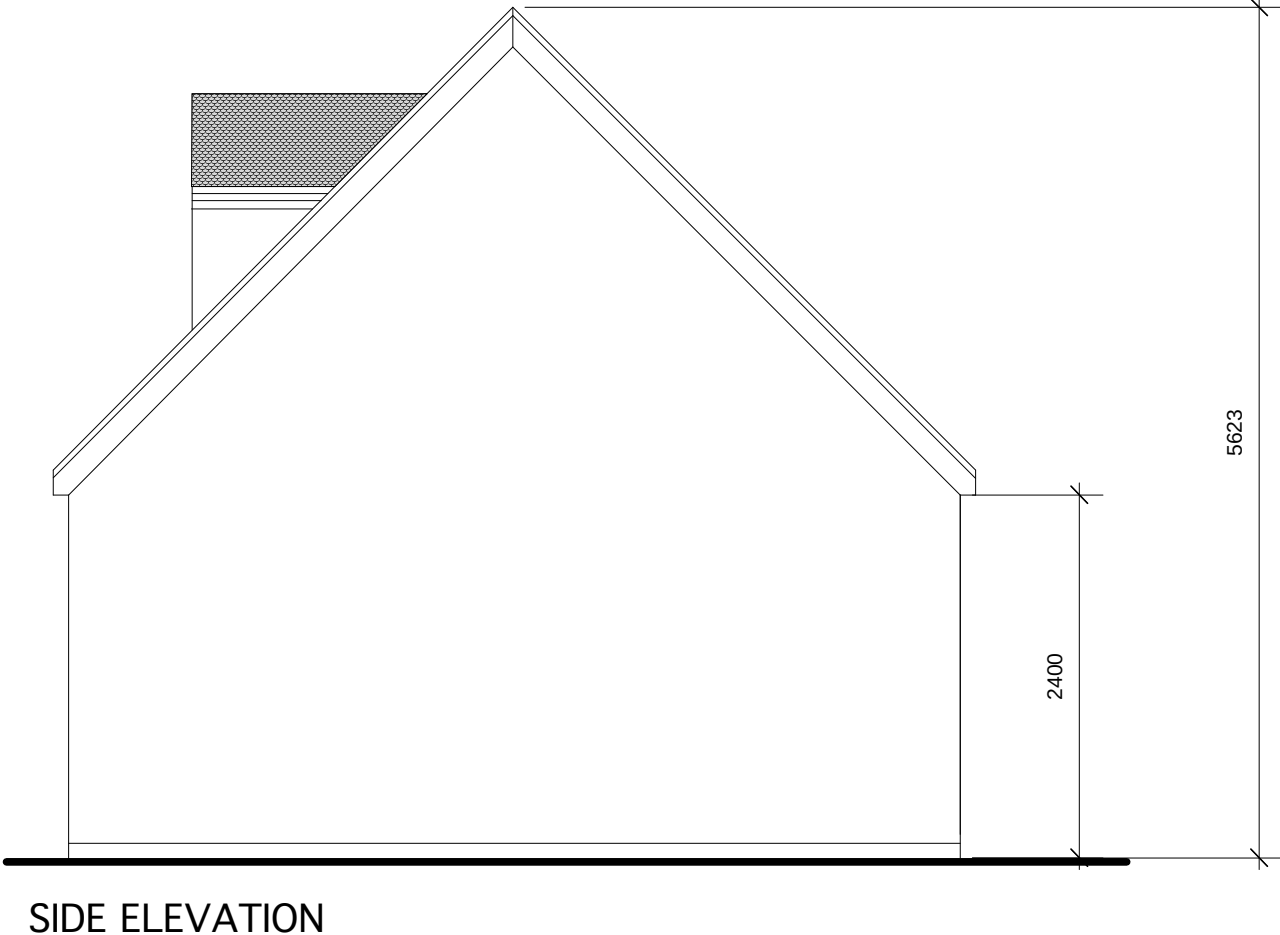
PROPOSED BOUNDARY PEAR TREE COTTAGE - SCALE 1:500



PROPOSED NEW GARAGE PLANS:



REAR ELEVATION

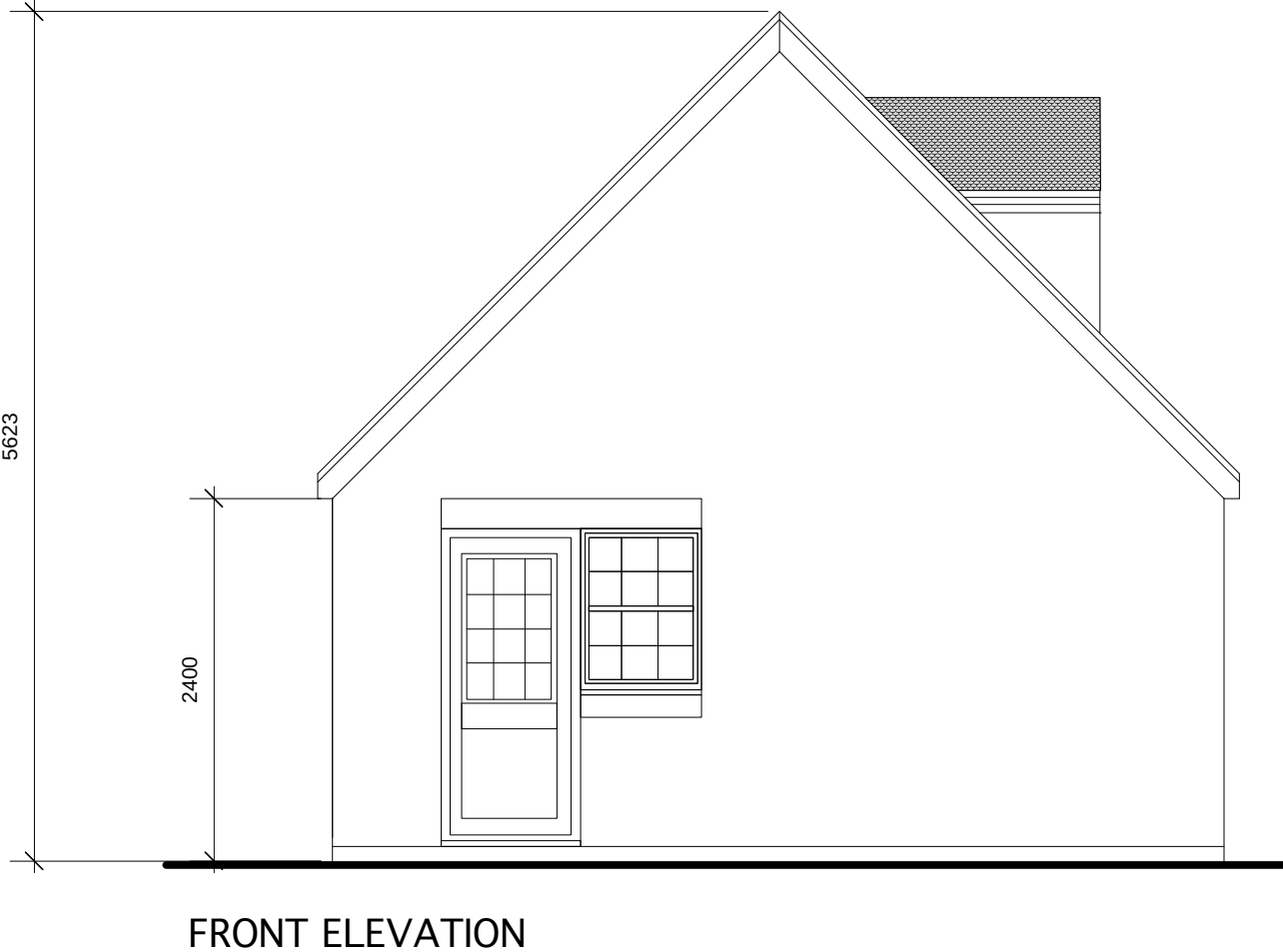


SIDE ELEVATION



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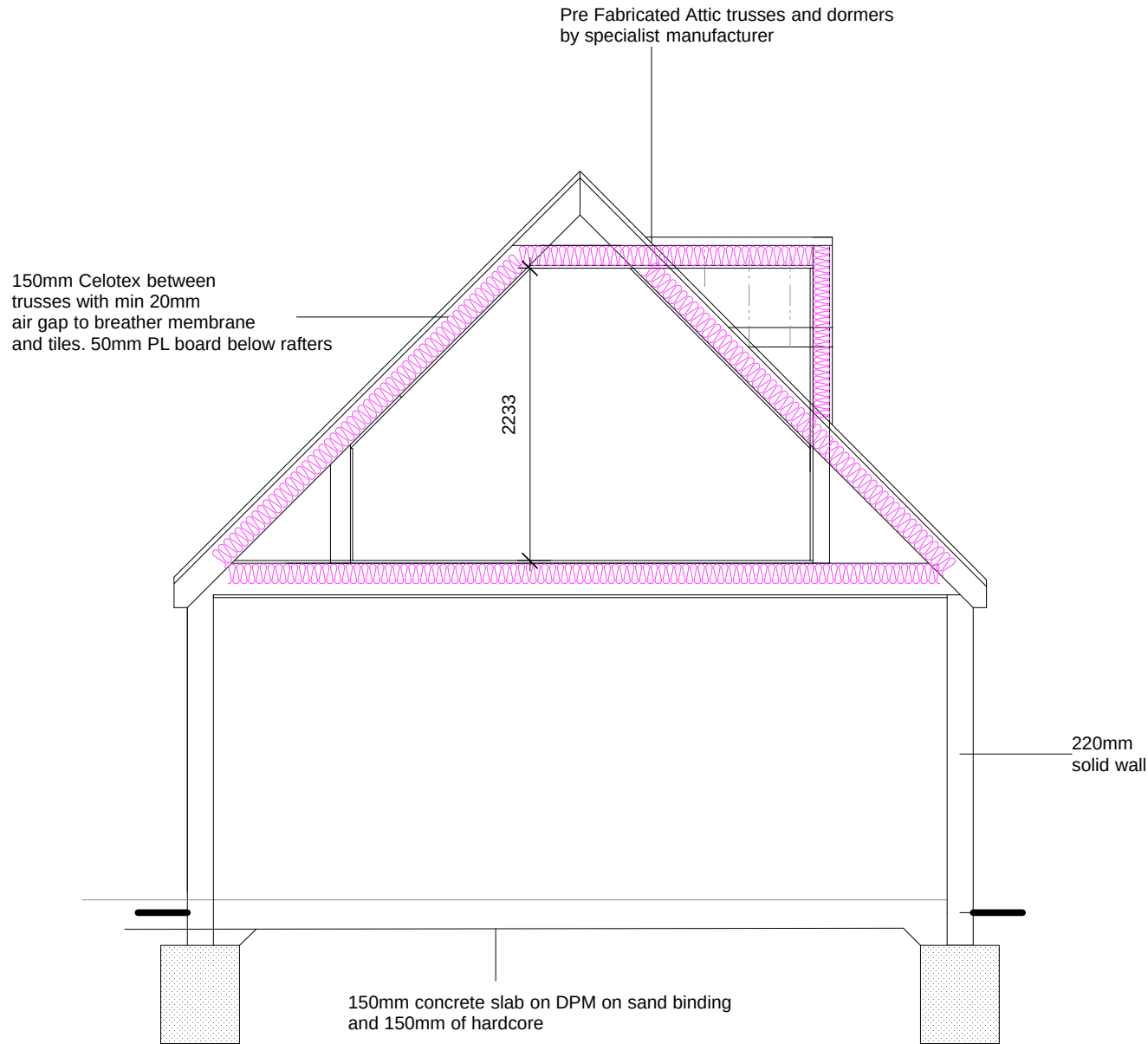
LOCATION PLAN:



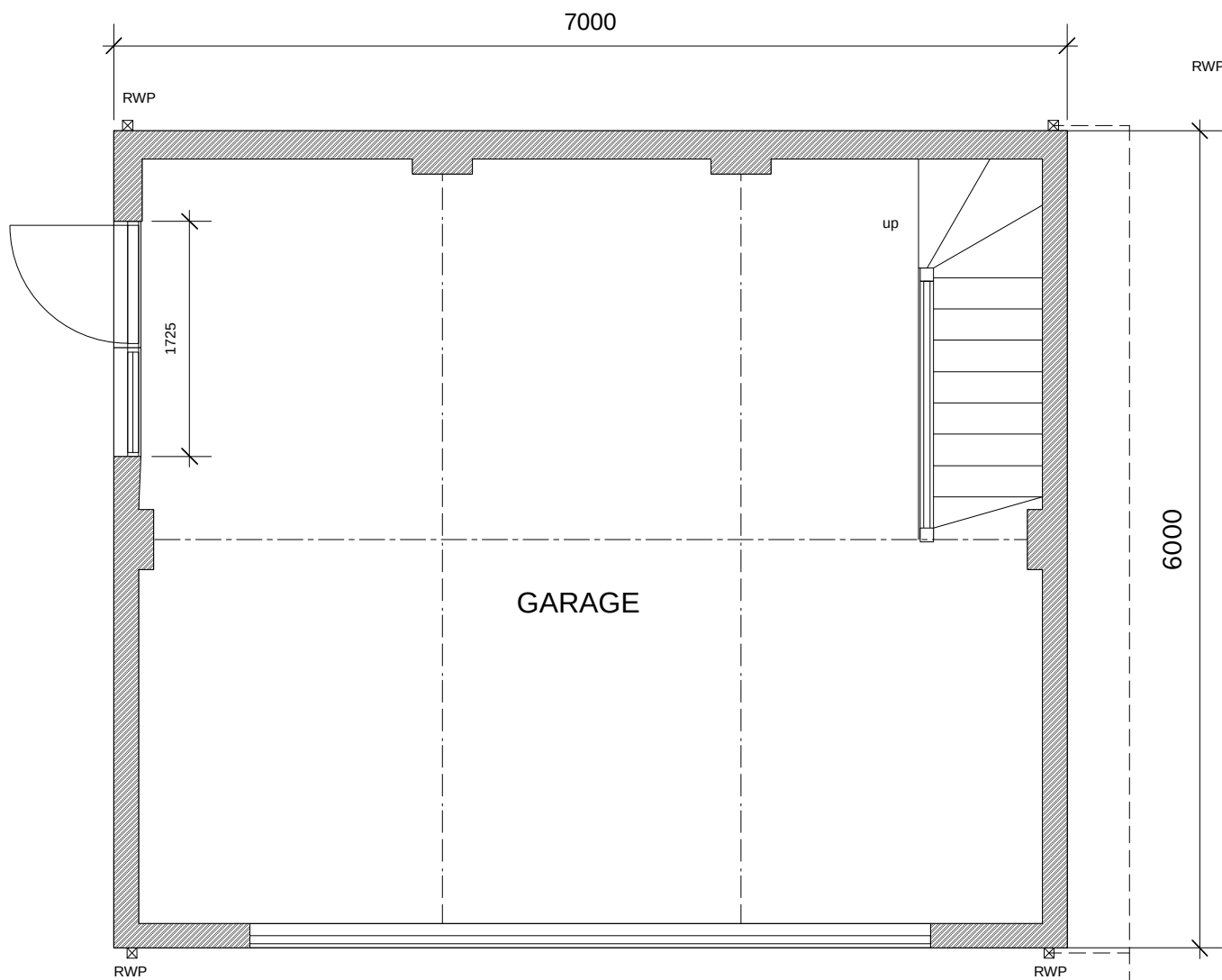
FRONT ELEVATION



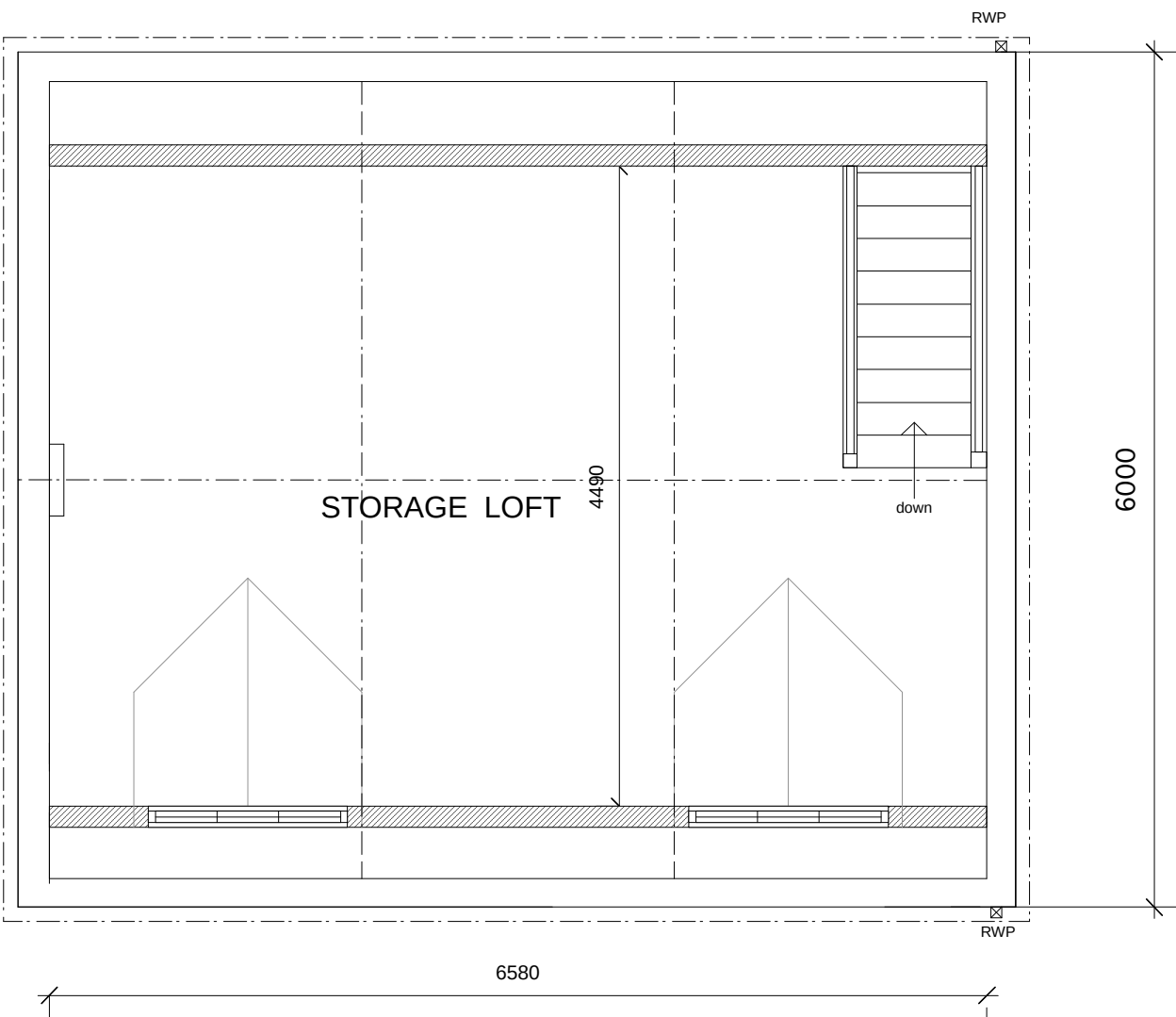
SIDE ELEVATION



SECTION:



GROUND FLOOR PLAN



FIRST FLOOR PLAN

NOTE: THIS DRAWING IS TO BE READ INCONJUNCTION WITH ALL OTHER DRAWINGS (S.ENG.S , SITE SURVEY INFORMATION AND STANDARD SPECIFICATION) ANY ANOMALIES ENCOUNTERED ARE TO BE COMMUNICATED BACK TO THE ARCHITECT PENDING FURTHER INFORMATION.

ALL DIMENSIONS INDICATED ARE TO BE CHECKED ON SITE FOR ACCURACY - ANY DISCREPANCIES ARE TO BE COMMUNICATED BACK TO THE ARCHITECT PENDING FURTHER INFORMATION. THIS DRAWING IS PREPARED FOR PLANNING AND BUILDING REGULATIONS ONLY AND NOT A WORKING DRAWING.

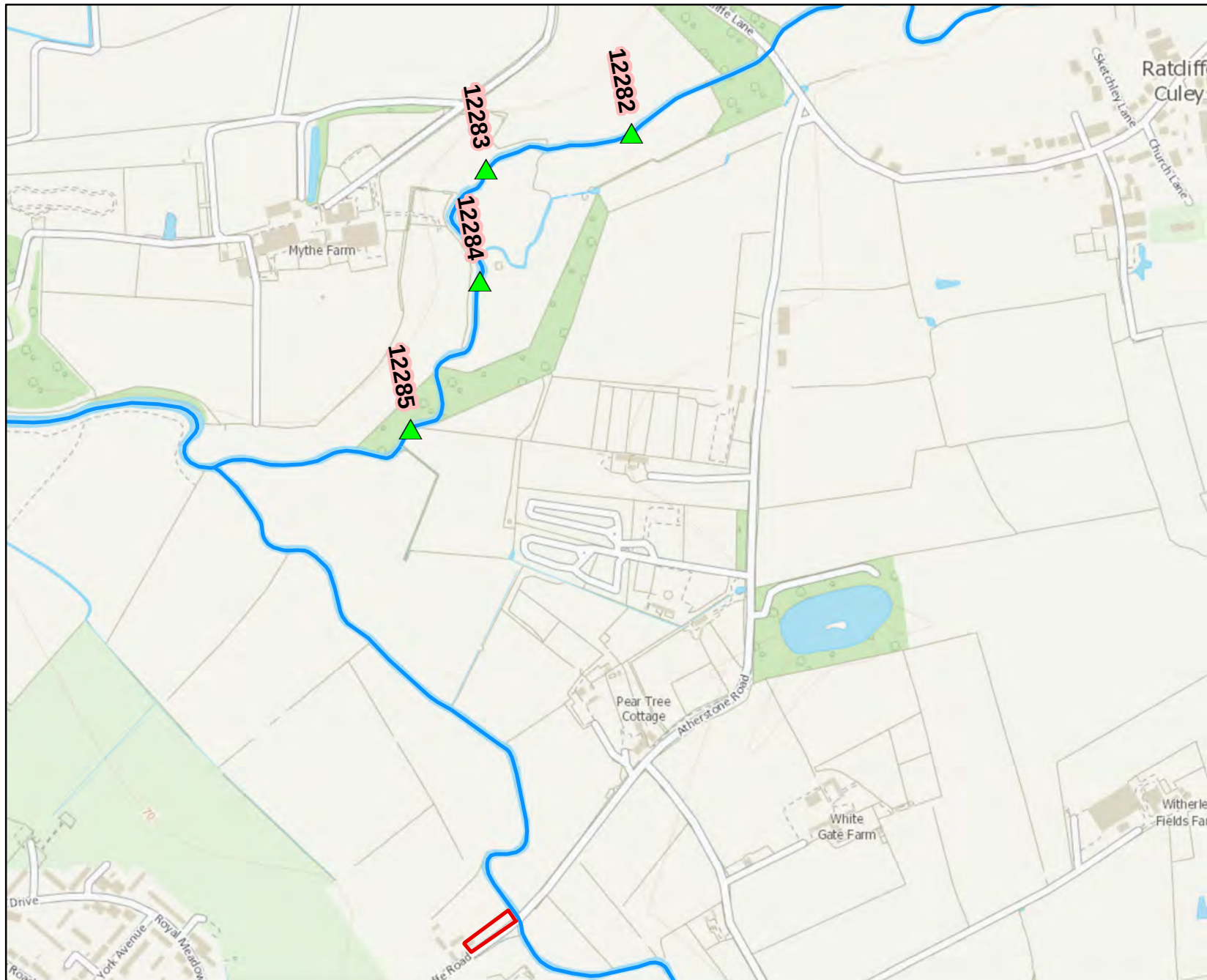
project	Pear Tree Cottage Ratcliffe Road Witherley CV9 3NX		
drawing title	Garage Plans and Elevations		
project number	PTC/01	drawing number	PTC/01/06
drawing revision		scale	1:50 @ A1
date	Feb 2023	drawn by	TK
		checked by	

Soakaway pit to be dug below inlet level. Size to be 1200mm x 1200mm x 1200mm fill with 20mm pea gravel capped with a geotextile sheet above inlet level. Pit to be passed on site by LA inspector all subject to soil type and conditions. Inspection Chamber to be fitted. A percolation test to be carried out and submitted to Building Control.

Appendix B

Product 4 Information

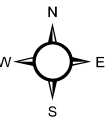
Sheepy Magna HMS (2013) Node Point Location Plan for , 2 Mythe Bridge Farm, Ref: 374517



Legend

- Statutory Main Rivers
- ▲ River Sence (2013) Node Points
- Approximate location of site

Scale: 1:7,000
Created: 02/09/2024
Eastings: 431,954
Northings: 299,080



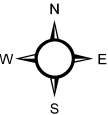
River Anker FRMS (2006) Node Point Location Plan for , 2 Mythe Bridge Farm, Ref: 374517



Legend

-  River Anker (2006) Node Points
-  Statutory Main Rivers
-  Approximate location of site

Scale: 1:2,000
Created: 02/09/2024
Eastings: 431,837
Northings: 298,558



Product 4 (Detailed Flood Risk Data) for 2 Mythe Bridge Farm, Ratcliffe Road, Witherley, Atherstone, CV9 3NX

Reference number: 374517

Date of issue: 02 September 2024

Model Information

The following information and attached maps contain a summary of the modelled information relevant to the area of interest. The information provided is based on the best available data as of the date of issue.

Model Name	Release Date
River Anker Flood Risk Mapping Study	2006
Sheepy Magna Hazard Mapping Study	2013

Flood Map for Planning (Rivers and Sea)

The Flood Map for Planning (Rivers and Sea) indicates the area at risk of flooding, **assuming no flood defences exist**, for a flood event with a 0.5% chance of occurring in any year for flooding from the sea, or a 1% chance of occurring in any year for fluvial (river) flooding (Flood Zone 3). It also shows the extent of the Extreme Flood Outlines (Flood Zone 2) which represents the extent of a flood event with a 0.1% chance of occurring in any year, or the highest recorded historic extent if greater. The Flood Zones refer to the land at risk of flooding and **do not** refer to individual properties. It is possible for properties to be built at a level above the floodplain but still fall within the risk area.

This Flood Map only indicates the extent and likelihood of flooding from rivers or the sea. It should also be remembered that flooding may occur from other sources such as surface water, sewers, road drainage, etc.

To find out which flood zone a location is in please use: <https://flood-map-for-planning.service.gov.uk/>

Definition of flood zones

- **Zone 1** - The area is within the lowest probability of flooding from rivers and the sea, where the chance of flooding in any one year is less than 0.1% (i.e. a 1000 to 1 chance).
- **Zone 2** - The area which falls between the extent of a flood with an annual probability of 0.1% (i.e. a 1000 to 1 chance) fluvial and tidal, or greatest recorded historic flood,

whichever is greater, and the extent of a flood with an annual probability of 1% (i.e. a 100 to 1 chance) fluvial / 0.5% (i.e. a 200 to 1 chance) tidal. (Land shown in light blue on the Flood Map).

- **Zone 3** - The chance of flooding in any one year is greater than or equal to 1% (i.e. a 100 to 1 chance) for river flooding and greater than or equal to 0.5% (i.e. a 200 to 1 chance) for coastal and tidal flooding.

Note: The Flood Zones shown on the Environment Agency's Flood Map for Planning (Rivers and Sea) do not take account of the possible impacts of climate change and consequent changes in the future probability of flooding. Reference should therefore also be made to the [Strategic Flood Risk Assessment](#) when considering location and potential future flood risks to developments and land uses.

Reduction in Risk of Flooding from Rivers and Sea due to Defences dataset (Replaces Areas Benefiting from Defences dataset)

The Areas Benefiting from Defences dataset (ABDs) is a dataset created by the Environment Agency to show areas that benefit from formal flood defences. This dataset was removed on 30 November 2022 from the Flood Map for Planning portal. A new dataset called Reduction in Risk of Flooding from Rivers and Sea due to Defences has been created:

<https://www.data.gov.uk/dataset/dcdcf96b-3293-4987-8ca8-9b8827f5ccf8/reduction-in-risk-of-flooding-from-rivers-and-sea-due-to-defences>

Instead upon searching for an address or location, users will be informed if their site is within an area assessed as having a reduction in risk of flooding from rivers and sea due to the presence of defences and it will direct users to seek flood risk assessment data (via a [Product 4](#)), which means Environment Agency staff can provide more detailed information relating to the impact of any flood defences in the area.

Please contact if there any queries: FCRM_risk_assessment@environment-agency.gov.uk

Node Data/ Modelled Levels

The attached map will show a selection of 1D model node points near to your site. The fluvial levels for these node points are shown below.

Fluvial Flood Levels (m AOD)

The modelled levels are given in m AOD (N), m AOD indicates metres Above Ordnance Datum (Newlyn).

The information is taken from the model referenced above and does not include the updated climate change figures.

River Sence				Annual Exceedance Probability - Maximum Water Levels (m AOD) Defended									
FID	Node Label	Easting	Northing	50% (1 in 2)	20% (1 in 5)	10% (1 in 10)	5% (1 in 20)	2% (1 in 50)	1.33% (1 in 75)	1% (1 in 100)	1% (1 in 100) inc. 20% Climate Change	0.5% (1 in 200)	0.1% (1 in 1000)
12282	SENC01_0852	431982	299535	69.15	69.24	69.30	69.37	69.45	69.49	69.51	69.61	69.59	69.78
12283	SENC01_0656	431798	299490	68.97	69.05	69.10	69.15	69.23	69.26	69.28	69.37	69.36	69.53
12284	SENC01_0484	431790	299349	68.80	68.86	68.89	68.94	69.00	69.03	69.05	69.12	69.11	69.26
12285	SENC01_0244	431703	299161	68.42	68.49	68.53	68.58	68.63	68.65	68.67	68.73	68.72	68.86

River Sence				Annual Exceedance Probability - Maximum Water Levels (m AOD) Un defended						
FID	Node Label	Easting	Northing	4% (1 in 25)	2% (1 in 50)	1.33% (1 in 75)	1% (1 in 100)	1% (1 in 100) inc. 20% Climate Change	0.5% (1 in 200)	0.1% (1 in 1000)
5093	033_3127_41	431842	298539	69.54	69.68	69.76	69.82	70.07	69.95	70.12
5096	033_3127_44	432009	298493	69.57	69.72	69.81	69.87	70.12	70.00	70.17
5098	033_3127_46	431829	298623	69.33	69.46	69.53	69.58	69.81	69.70	69.87

Climate Change

In February 2016 the 'Flood Risk Assessments: Climate Change Allowances' were published on GOV.UK. In July 2022 the climate change allowances for planning applications were further updated to more accurately represent the local catchments <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>. The data provided in this product does not include the new allowances. You will need to consider this data and factor in the more up to date allowances to demonstrate the development will be safe from flooding. The fluvial climate change factors are now more complex and a single uplift percentage across England cannot be justified.

The Environment Agency will incorporate the new allowances into future modelling studies. For now, it remains the applicant's responsibility to demonstrate through their proposal and flood risk assessments that new developments will be safe in flood risk terms for its lifetime.

Recorded Flood Outlines

Following an examination of our records of historical flooding we do hold records of flooding for this area, please find tabulated information below for these recorded flood events.

Flood Event Date	Source of Flooding	Cause of Flooding
December 1992	Fluvial – main river	Unknown

The corresponding recorded flood outline/s can be accessed here:
<https://data.gov.uk/dataset/recorded-flood-outlines1>

The Recorded Flood Outlines take into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding. It includes flood extents that may have been affected by overtopping, breaches or blockages. Any flood extents shown do not necessarily indicate that properties were flooded internally. It is also possible that the pattern of flooding in this area has changed and that this area would now flood or not flood under different circumstances.

Please note that our records are not comprehensive and that the map is an indicative outline of areas which have previously flooded, not all properties within this area will have flooded. It is possible that other flooding may have occurred that we do not have records for.

You may also wish to contact your Local Authority or Internal Drainage Board (where relevant), to see if they have other relevant local flood information.

Flood Defences

Flood defences do not completely remove the chance of flooding. They can be overtopped by water levels which exceed the capacity of the defences.

If flood defences are located in your area, you can access this data here:

<https://data.gov.uk/dataset/cc76738e-fc17-49f9-a216-977c61858dda/aims-spatial-flood-defences-inc-standardised-attributes>

<https://data.gov.uk/dataset/76828b72-3c9c-4700-83c7-d7c36047d322/flood-map-for-planning-rivers-and-sea-spatial-flood-defences-without-standardised-attributes>

Planning development/s

If you have requested this information to help inform a development proposal, then you should note the information on GOV.UK on the use of Environment Agency Information for Flood Risk Assessments. You can also request pre application advice:

<https://www.gov.uk/planning-applications-assessing-flood-risk>

<https://www.gov.uk/government/publications/pre-planning-application-enquiry-form-preliminary-opinion>

Supporting Information

River modelling: technical standards and assessment guidance

The link below contains standards for the flood risk management industry on how to build and review hydraulic models and provide evidence for flood risk management decisions.

<https://www.gov.uk/government/publications/river-modelling-technical-standards-and-assessment>

Where modelled fluvial flood levels for any watercourse have not been produced/provided by the Environment Agency the Applicant/their Consultants will need to undertake suitable hydraulic calculations or modelling to determine any missing/required flood return periods

e.g. the 3.3 % AEP (1 in 30 Year) Functional Flood event level (and flood plain outline) at the site. Please Note: On 25 August 2022 the definition of the functional flood level changed to the 1 in 30 year return period, for more information see <https://www.gov.uk/guidance/flood-risk-and-coastal-change>

Hydraulic calculations/modelling must be undertaken by a suitable person, and any modelling software chosen should be capable of producing the required output. For any hydraulic modelling carried out as part of a FRA, a technical description of the model should be provided, including the name and version of the software used, referring to published papers/reports where

appropriate to provide technical detail and to demonstrate the applicability of the model(s) to the situation in question.

Surface Water

Managing the risk of flooding from surface water is the responsibility of Lead Local Flood Authorities. The 'risk of flooding from surface water' map has been produced by the Environment Agency on behalf of government, using information and input from Lead Local Flood Authorities.

You may wish to contact your Local Authority who may be able to provide further detailed information on surface water.

It is not possible to say for certain what the flood risk is but we use the best information available to provide an indication so that people can make informed choices about living with or managing the risks. The information we supply does not provide an indicator of flood risk at an individual site level. Further information can be found on the Agency's website:

<https://flood-warning-information.service.gov.uk/long-term-flood-risk>

Flood Risk from Reservoirs

The Flood Risk from Reservoirs map can be found on the Long Term Flood Risk Information website:

<https://flood-warning-information.service.gov.uk/long-term-flood-risk/map?map=Reservoirs>

Flood Alert & Flood Warning Area

We issue flood alert/warnings to specific areas when flooding is expected. If you receive a flood warning you should take immediate action.

You can check whether you are in a Flood Alert/Warning Area and register online using the links below:

<https://www.gov.uk/check-flood-risk>

<https://www.gov.uk/sign-up-for-flood-warnings>

If you would prefer to register by telephone, or if you need help during the registration process, please call Floodline on 0345 988 1188.

The associated dataset for flood warning areas is available here:

<https://data.gov.uk/dataset/flood-warning-areas3>

The associated dataset for flood alert areas is available here: <https://data.gov.uk/dataset/flood-alert-areas2>

Flood Risk Activity Permits

We now consider applications for works, which may be Flood Risk Activities, under Environmental Permitting Regulations. This replaces the process of applying for a Flood Defence Consent. You may need an environmental Permit for flood risk activities if you want to do work:

- in, under, over or near a main river (including where the river is in a culvert)
- on or near a flood defence on a main river
- in the flood plain of a main river
- on or near a sea defence

Please go to this website to find out more about how to apply:

<https://www.gov.uk/guidance/flood-risk-activities-environmental-permits>.

Please be aware that Bespoke and Standard Rules permits can take up to 2 months to determine and will incur a charge.

Further details about the Environment Agency information supplied can be found on the GOV.UK website:

<https://www.gov.uk/browse/environment-countryside/flooding-extreme-weather>